

# Emerging Technologies and Knowledge Management

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8 September 2005

# Knowledge Management

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Facilitating access to project/enterprise knowledge over time

- Natural focus for digital technology
- Why so difficult?

# Locating Information in Organizations

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- Digital documents are difficult to find
  - Adding metadata is an effort
  - People disagree on labels
- When found, documents are difficult to assess
  - Explanatory context often in inaccessible email DLs
- So people seek human links to relevant information, as before

# 1990s: Pioneers in Virtual Worlds



Explored online environments

- 2.5 and 3D virtual worlds
- Focus was on perception, cognition, usefulness



# Early Virtual World Experiments







## Welcome to Boeing World

327 registrations as of 3-17-98.  
Boeing World has been  
expanded from 25 to 30  
decameters from Ground Zero.

### General Information

- [About the Boeing UniServer from ActiveWorlds](#)
- [How to download and configure a browser \(NT and Win95 only\)](#)
- [How and where to build](#)
- [What's New](#) (22 December 1997)

### Objects and Art

*Objects are in zipped format. To view them, copy an object and change its name.zip to name.rwx. e.g. to see the object **street1.zip**, type the name **street1.rwx** in the Object Properties box.*

- [Objects in Boeing World](#)
- [Objects in ca-test](#)

### Useful Links and Discussion Groups

# 1990s: Pioneers in Virtual Worlds

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Explored online environments

- 2.5 and 3D virtual worlds
- Focus was on perception, cognition, usefulness
- Little contribution to enterprise KM





- Collaborative simulations

- Multiplayer online games



# Today: Settlers in Virtual Worlds

Making online environments inhabitable

- From cognition and performance to emotion and engagement
- Digital photos, tagging, blogs, search





# Next Generation to Enter Organizations

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- New technologies
  - IM and text messaging
  - Tagging
  - Weblogs
- New Behaviors
  - Multi-tasking
  - Multimedia authoring
  - Search-and-browse
- Parallels the generation that brought email and word processing into organizations

# A Tale of Two Technologies

## Email in 1985 and today

- Used mostly by students
  - Used by everyone
- Access limited to friends
  - Accessible to everyone
- Clients not interoperable
  - Complete interoperability
- Conversations ephemeral
  - Conversations saved
- Chosen for informality
  - Became the formal option
- Organizational distrust: Chit-chat? ROI?
  - Mission-critical technology

## IM in 2005 is evolving

- Used mostly by students
  - Use spreading rapidly
- Access limited to friends
  - Pressure to remove limits
- Clients not interoperable
  - Pressure for interoperability
- Conversations ephemeral
  - Recording is more common
- Chosen for informality
  - Becoming more formal
- Organizational distrust: Chit-chat? ROI?
  - Will be mission-critical!

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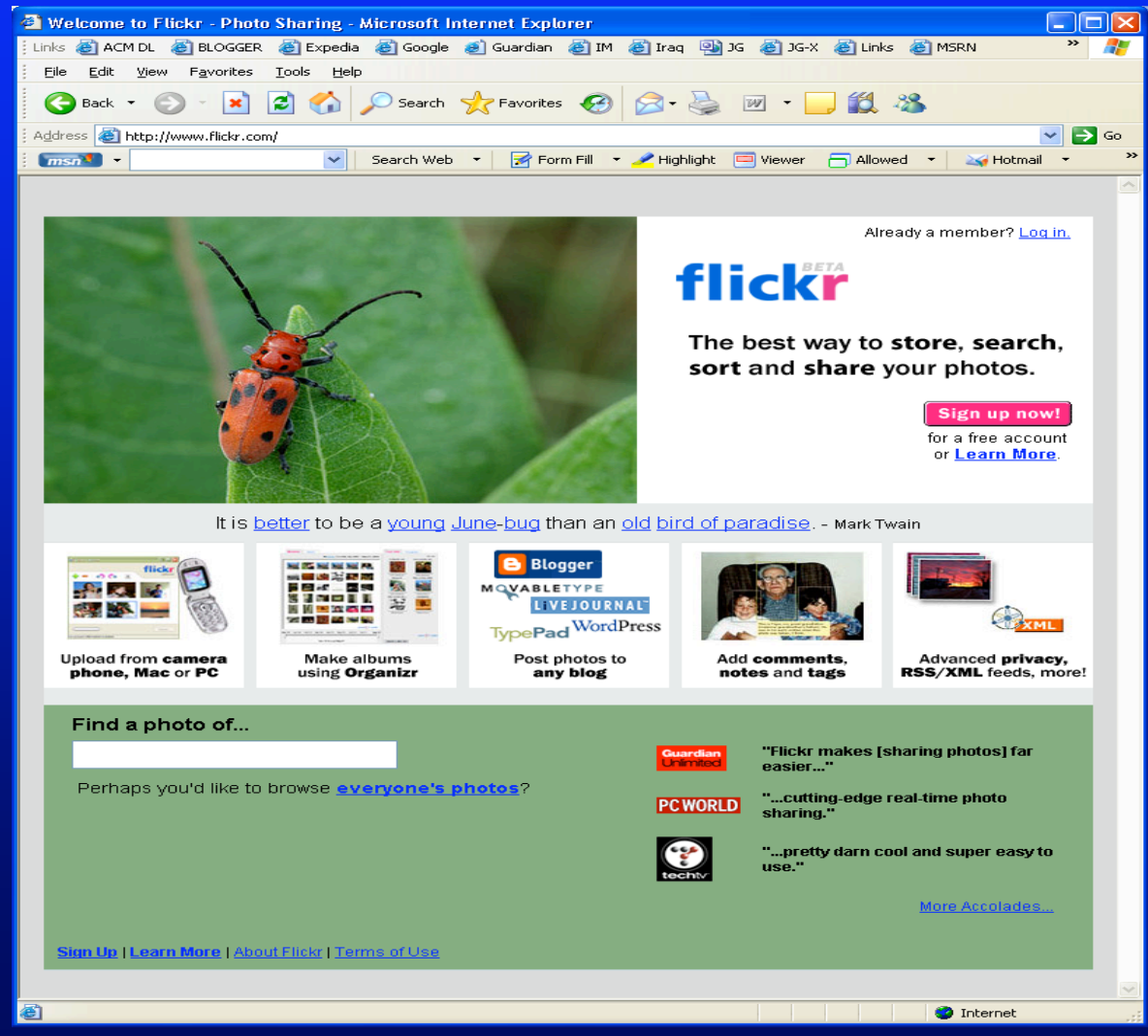
# Locating Information in Organizations

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  - People disagree on labels
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# Tagging

- User-generated metadata
- Very lightweight
- Immediately visible to others



# Tagging

- User-generated metadata
- Very lightweight
- Immediately visible to others

Flickr: Photos tagged with england - Microsoft Internet Explorer

Links: ACM DL, BLOGGER, Expedia, Google, Guardian, IM, Iraq, JG, JG-X, Links, MSRN

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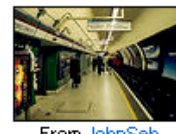
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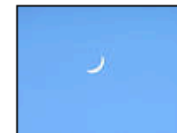
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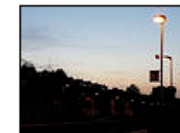
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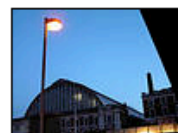
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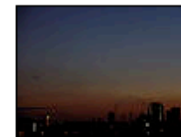
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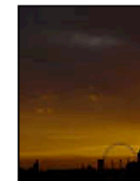
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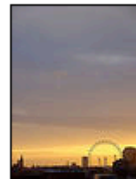
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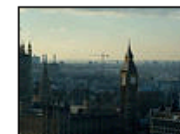
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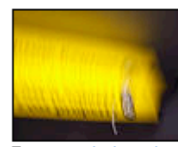
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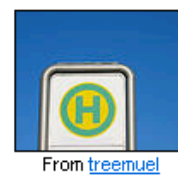
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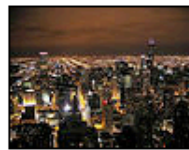
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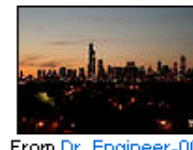
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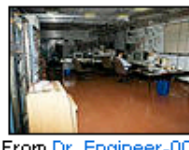
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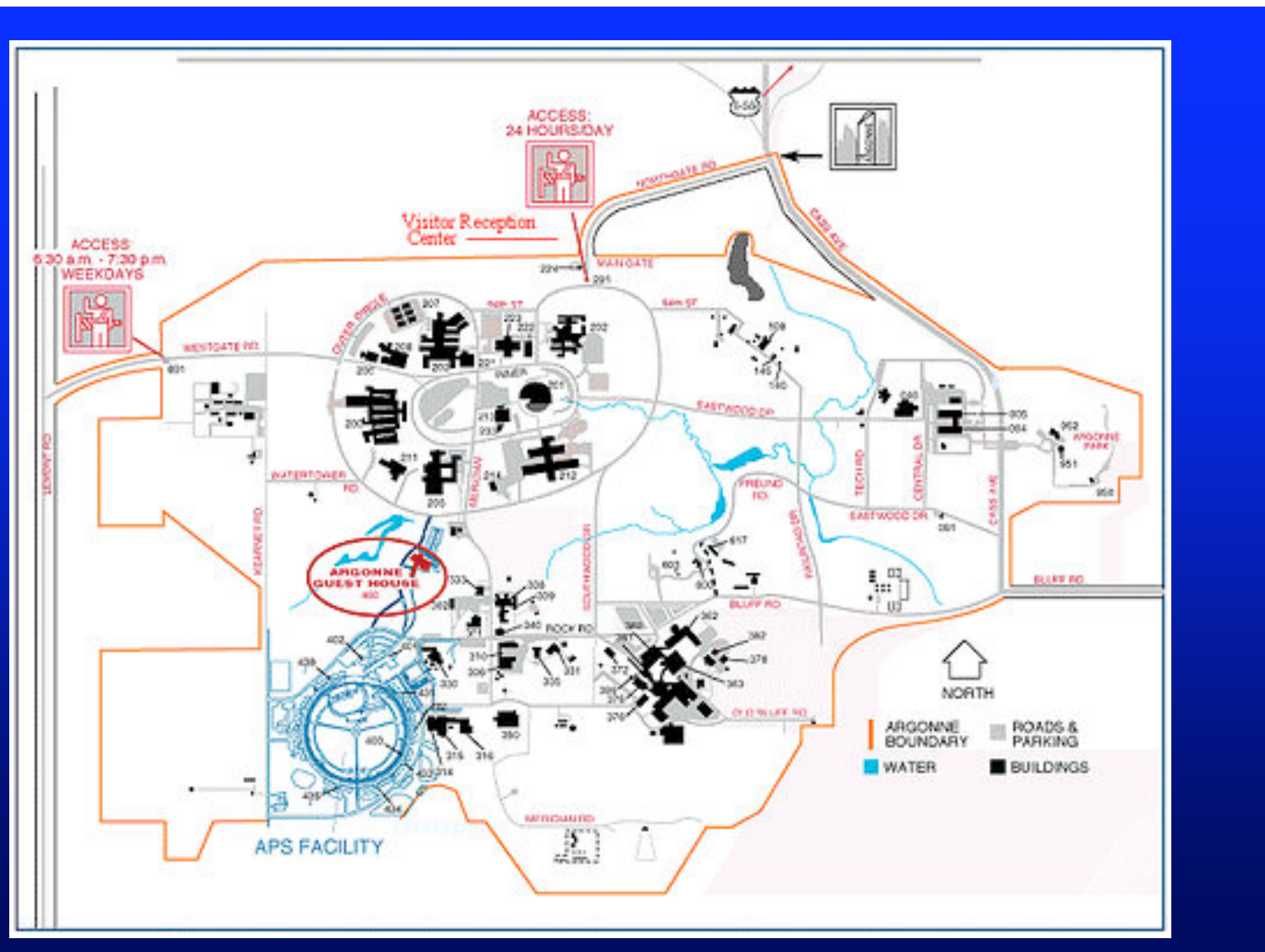


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VIA I-55 NORTH TO CASS AVE. SO.  
TO NORTHGATE ROAD

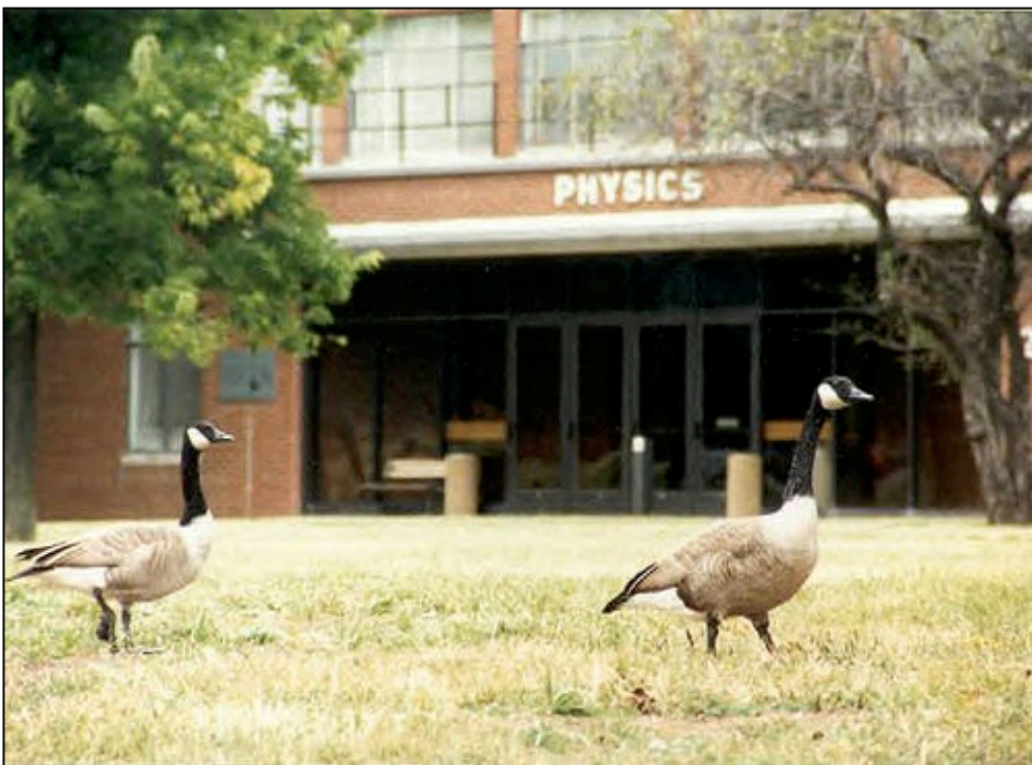


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Watch Geese on duty outside the entrance to the Physics Lab.

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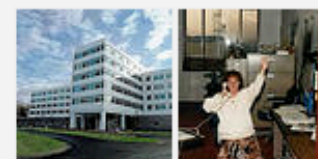
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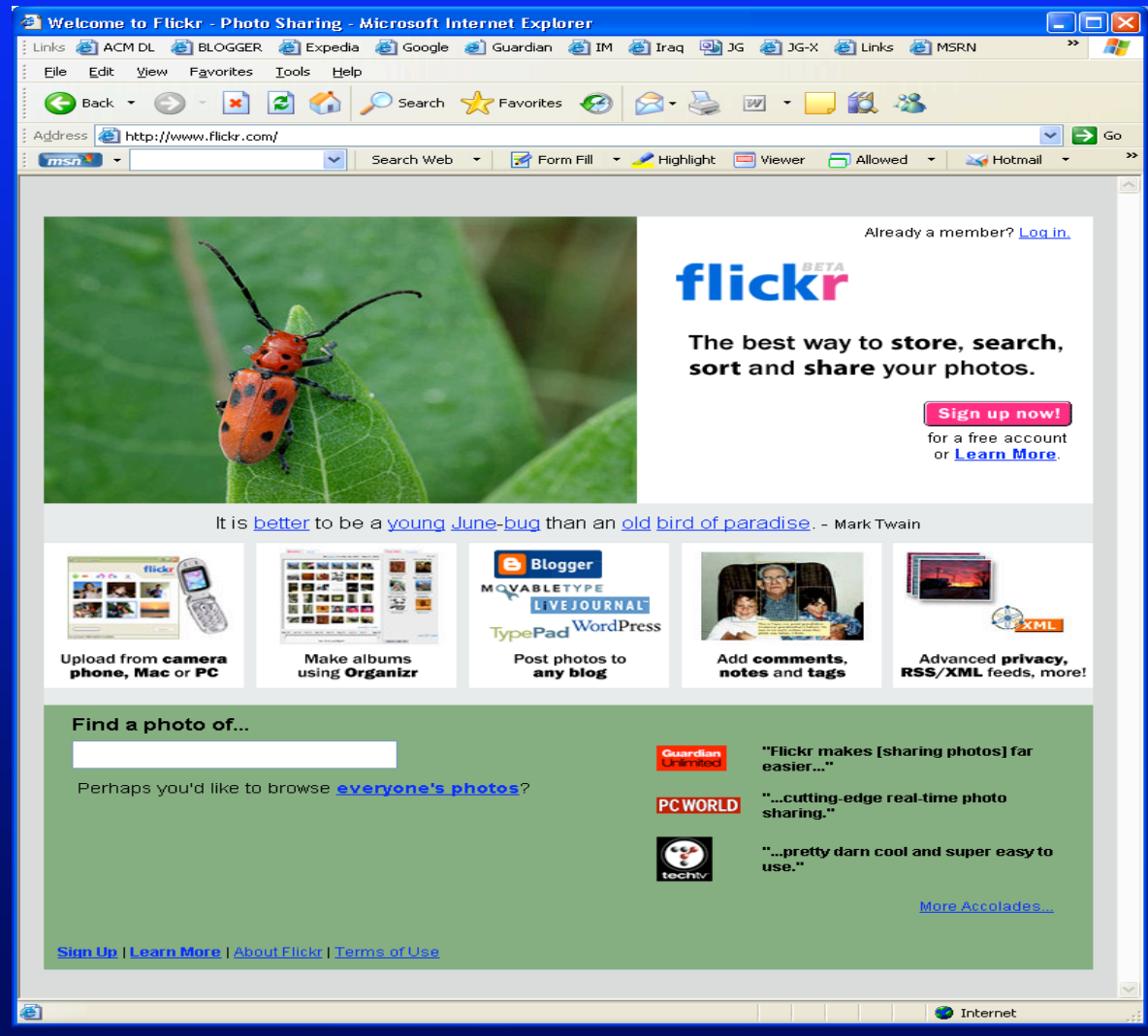
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- [google](#)
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# Tagging

- User-generated metadata
- Very lightweight
- Immediately visible to others
- Question: How far can a bottom-up approach go?



## Tags / london

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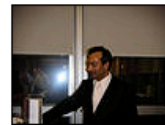
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From [mlazopoulou](#)



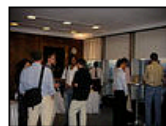
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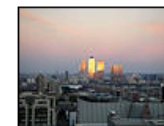
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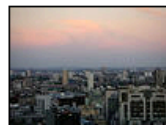
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From [tiantian](#)



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From [mlazopoulou](#)



From [mlazopoulou](#)



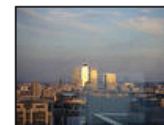
From [mlazopoulou](#)



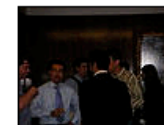
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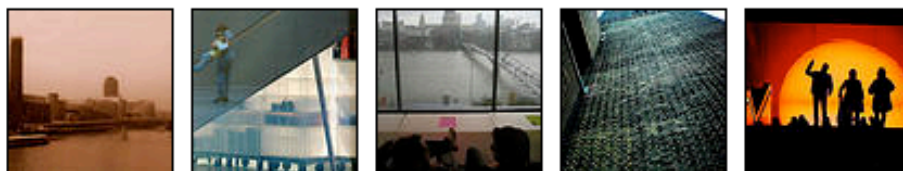
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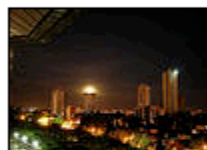
From [Blue Dragonfly Girl](#)



From [Quod](#)



From [Lucypassos](#)



From [Lucypassos](#)



From [work4bandwidth](#)



From [Aoife city womanchile](#)



From [Lucypassos](#)



From [jajamin](#)



From [lunaryuna](#)



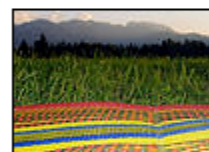
From [phil h](#)



From [Rezlej](#)



From [gisleh](#)



From [h.neumeyer](#)



From [Spikebot](#)



From [Spikebot](#)

# Locating Information in Organizations

---

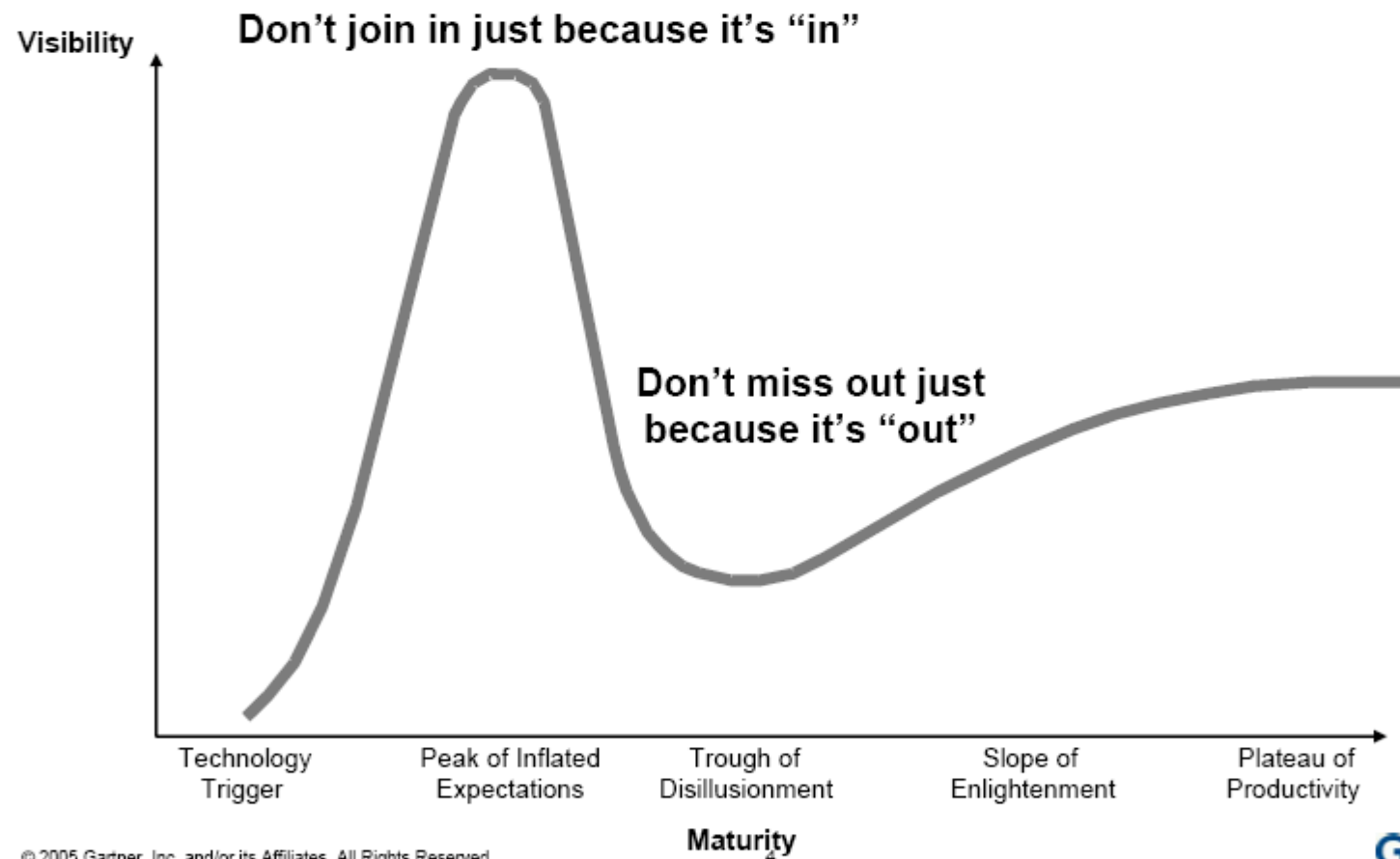
- Digital documents are difficult to find
  - Adding metadata is an effort
  - People disagree on labels
- When found, documents are difficult to assess
  - Explanatory context often in inaccessible email DLs
- So people seek human links to relevant information, as before

# Weblogs (Blogs)

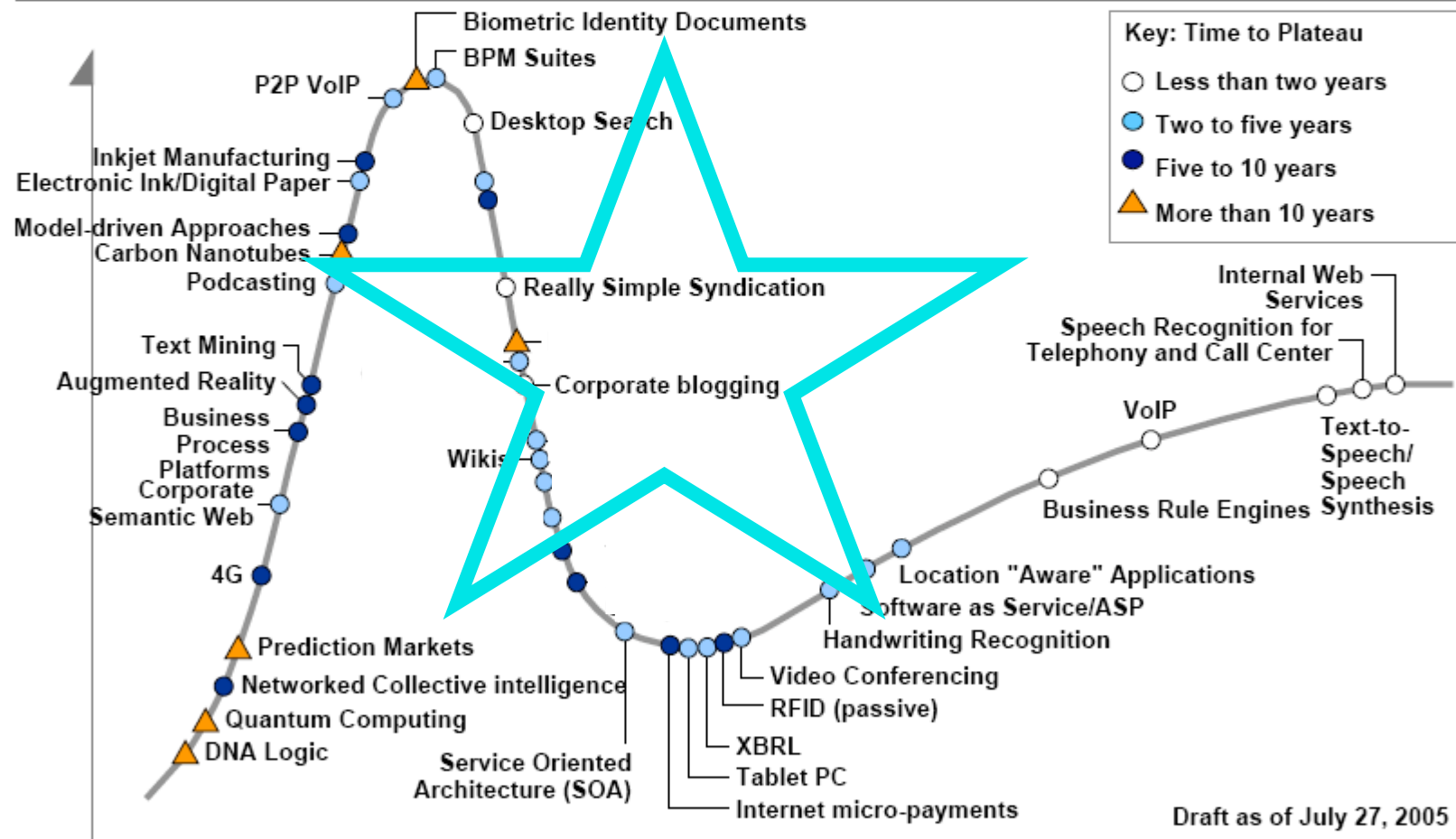
- Frequently-updated website composed of posted entries in reverse-chronological order



# Beware the Hype Cycle



# Emerging Technologies Hype Cycle 2005



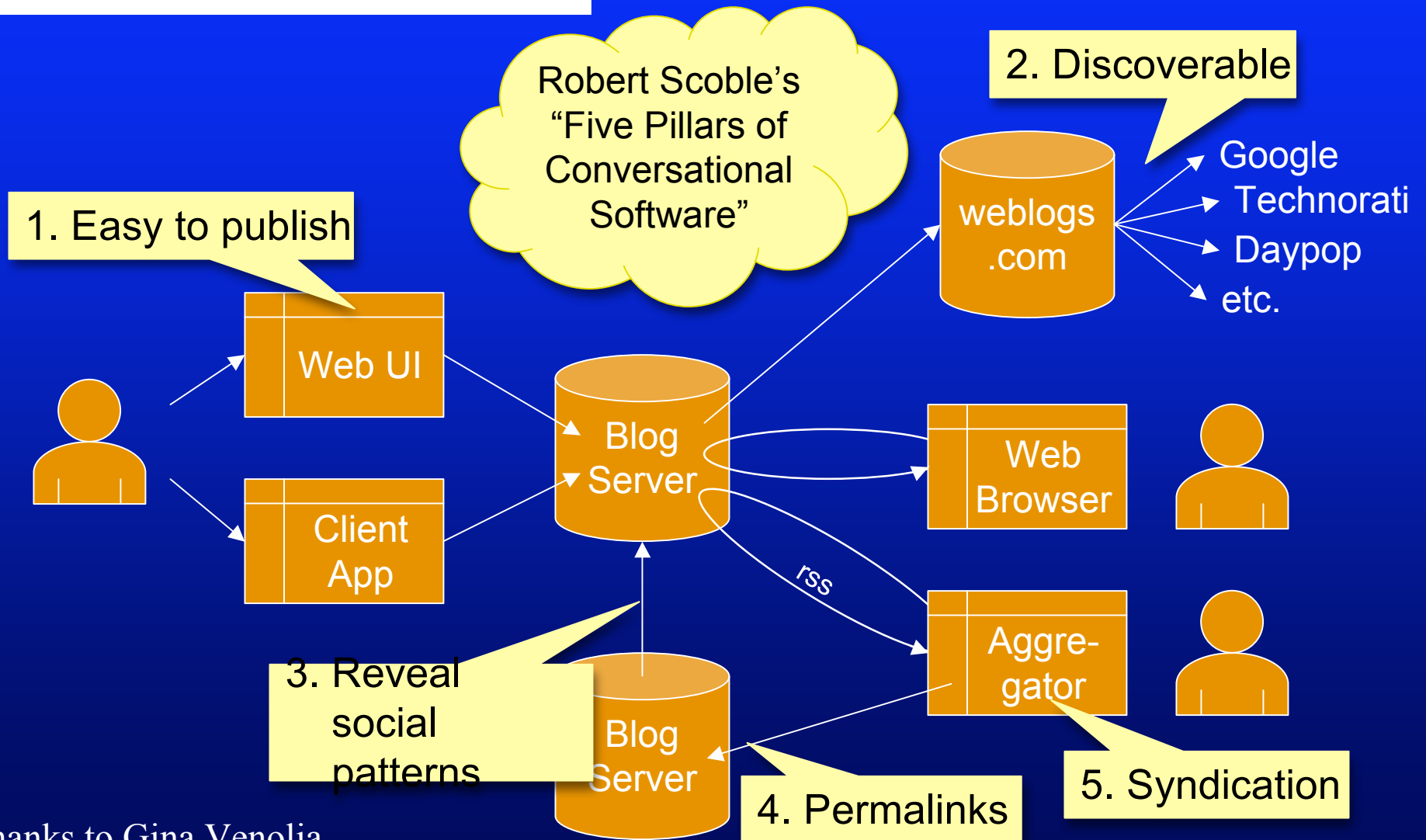
Draft as of July 27, 2005

# Weblogs (Blogs)

---

- Frequently-updated website composed of posted entries in reverse-chronological order
- 'Single voice' even when multiple authors
- The most recent is the most interesting
- Fostering discussion (on or off the blog)
  - Distribution/notification is fast, easy, flexible
  - Discussion through comments
  - Blogs and posts often link to other blogs and posts
  - Inbound links (trackback)
- Authorship, audience, topics, and media vary

# How Blogs Work



Thanks to Gina Venolia



# Blogs in the Workplace

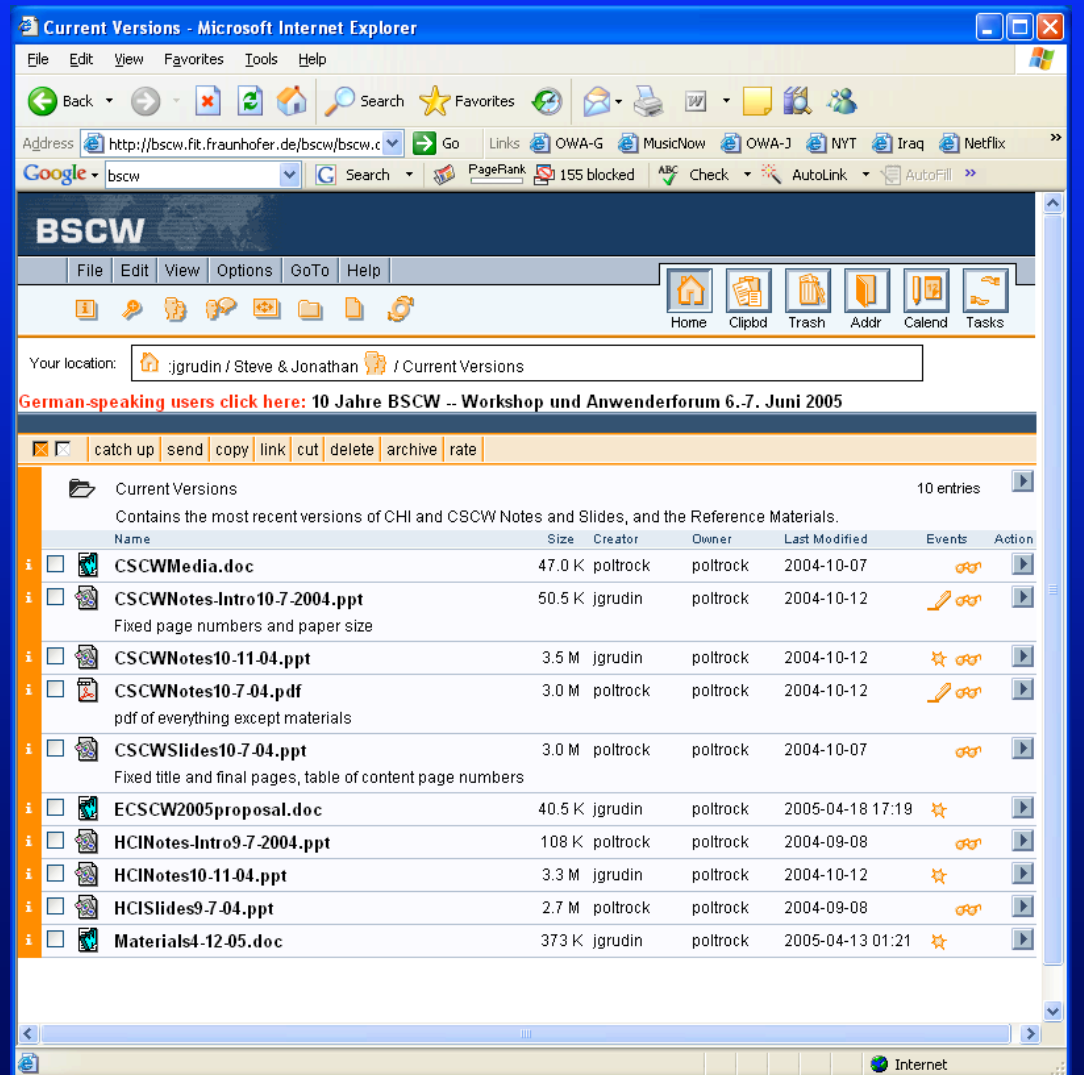
---

- Categories of most blogs today
  1. Public personal interactive diaries
  2. 'A-list' bloggers on politics, technology, events, cool stuff
- Corporate use progression
  - Incoming: rapid access to event coverage
  - Incoming: invaluable insight into comments on your products
  - 3. Outgoing: tremendous (though risky) ability to put human face on your enterprise
  - 4. Internal (prediction): a knowledge management technique that mirrors the outgoing benefit



# Document Repositories (e.g. Sharepoint)

- Useful but often ambiguous
- Emailed explanations not available later
- Email DLs contain extraneous discussion
- Commenting code, read me file analogies



# Project Blog

---

- Document repository + blog or blog features
- Blog links to repository
- Blog entries briefly describe documents, reminders, status, etc. – a single voice
- Discussions, debates carried out in email DL; when worth preserving is captured and put in repository with blog entry description
- It is easier to blog a comment than to email it!

Internet Explorer

Links: [ACM](#) [BLOGGER](#) [Expedia](#) [Google](#) [Guardian](#) [IM](#) [Iraq](#) [JG](#) [JG-X](#) [Links](#) [MSRN](#) [NECTAR](#) [Searches](#) [Shari](#)

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Address: <http://cscw-tutorial.blogspot.com/> Go

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**Blogger**

---

# cscw-tutorial

A SHARED BLOG TO SUPPORT OUR CONTINUING EVOLUTION OF A TUTORIAL ABOUT COMPUTER SUPPORTED COOPERATIVE WORK (CSCW)

---

**Wednesday, May 11, 2005**  
Blog/NetGen slides updated for NUS/CTS talks, should be moved into tutorial.  
// posted by Jonathan @ 2:12 PM (0) comments

**Monday, April 18, 2005**  
Uploaded ECSCW 2005 proposal  
// posted by Jonathan @ 8:20 AM (0) comments

**Tuesday, April 12, 2005**  
Updated materials with CSCW journal TOC, have not yet entered CSCW 2004 papers or videos  
// posted by Jonathan @ 4:18 PM (0) comments

**Tuesday, January 25, 2005**  
Submitted a tutorial to INTERACT 2005. The submission consisted of a single pdf file created from two Word files. One file contains the proposal (title, tutor information, content, and info for an advance program). The other file contains a two-page abstract in Springer Verlag's publication format. Both Word files were uploaded to BSCW.

// posted by Steven @ 8:34 AM (0) comments

Completed and submitted a proposal and a two-page abstract for INTERACT 2005. The abstract was formatted in accordance with Springer-Verlag's publication format. They were submitted as a single pdf file. The two separate files were uploaded to BSCW <http://bscw.fit.fraunhofer.de/bscw/bscw.cgi/0/37887058>

// posted by Steven @ 8:27 AM (0) comments

**Sunday, January 23, 2005**  
Today we worked on INTERACT 2005 submission. Working from CHI and INTERACT 2003 materials Steve drafted a 4-page proposal and 2-page for-publication summary, and sent email to resolve some uncertainties as to instructions. Jonathan made a revision pass over the materials. We plan to place them on the BSCW site when they are complete.

// posted by Jonathan @ 6:04 PM (0) comments

**Friday, December 10, 2004**

**links**

[BSCW](#)

**archives**

Steve & Jonathan - Microsoft Internet Explorer

Links ACM DL BLOGGER Expedia Google Guardian IM Iraq JG JG-X Links MSRN

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Address <http://bscw.fit.fraunhofer.de/bscw/bscw.cgi/0/37887058> Go

msn Search Web Form Fill Highlight Viewer Allowed Hotmail

## BSCW

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German-speaking users click here: 10 Jahre BSCW -- Workshop und Anwenderforum 6.7. Juni 2005

catch up send copy link cut delete archive rate to case

Steve & Jonathan 20 entries

	Name	Size	Creator	Owner	Last Modified	Events	Action
	<b>Current Versions</b>	10	jgrudin	poltrack	2005-04-18 17:19		
	Contains the most recent versions of CHI and CSCW Notes and Slides, and the Reference Materials.						
	<b>2-pageINTERACT2005-1-25.doc</b>	32.0 K	poltrack	poltrack	2005-01-25 17:26		
	2-page abstract in Springer Verlag's publication format for INTERACT 2005						
	<b>ProposalINTERACT20051-25.doc</b>	40.0 K	poltrack	poltrack	2005-01-25 17:25		
	Proposal for INTERACT 2005						
	<b>CSCWNotes10-7-04.ppt</b>	3.5 M	jgrudin	poltrack	2004-10-12		
	<b>Herring-Smith-CSCW - Tutorial - 2 - Morning and Afternoon.pdf</b>	6.4 M	poltrack	poltrack	2004-10-09		
	<b>CSCWSlides10-6-04.ppt</b>	2.8 M	jgrudin	poltrack	2004-10-07		
	<b>Materials9-7-04.doc</b>	362 K	poltrack	poltrack	2004-09-08		
	<b>HCINotes9-7-04.ppt</b>	4.3 M	poltrack	poltrack	2004-09-08		
	<b>Materials8-26-04.doc</b>	373 K	jgrudin	poltrack	2004-08-27		
	<b>HCINotes8-26-04.ppt</b>	3.2 M	jgrudin	poltrack	2004-08-26		
	<b>HCISlides8-26-04.ppt</b>	2.5 M	jgrudin	poltrack	2004-08-26		
	<b>HCISlides5-3-04.ppt</b>	2.4 M	jgrudin	poltrack	2004-08-26		
	<b>HCISlides4-2-04.ppt</b>	2.4 M	jgrudin	poltrack	2004-08-26		
	<b>HCINotes-Intro2-15-2004.ppt</b>	108 K	jgrudin	poltrack	2004-04-06		
	<b>CSCWNotes-Intro2-15-04.ppt</b>	49.5 K	jgrudin	poltrack	2004-04-06		
	<b>HCIMedia3-31-04.doc</b>	47.5 K	jgrudin	poltrack	2004-04-06		
	<b>CSCWMedia2002.doc</b>	53.0 K	jgrudin	poltrack	2004-04-06		
	<b>CSCWSlides4-2-04.ppt</b>	2.6 M	jgrudin	poltrack	2004-04-06		
	<b>CSCWNotes4-2-04.ppt</b>	2.5 M	jgrudin	poltrack	2004-04-06		
	<b>CHISlides3-31-04.ppt</b>	2.4 M	poltrack	poltrack	2004-04-01		
	Changed bar color and fixed spelling of infrastructrue						

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Internet



# Chronological & Other Structures

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- Why chronological sequencing is good
  - Highly familiar, we can reason about it
  - Facilitates skimming
- What about structured information?
  - Prized by managers
  - Can be created and placed in document repository
- Mergers of blog, repository features likely
- For other purposes, wikis are appropriate
  - Require more top-down management



WIKIPEDIA  
The Free Encyclopedia

- Main Page
- Community portal
- Current events
- Recent changes
- Random page
- Help
- Donations

search




toolbox

- What links here
- Related changes
- Special pages

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## Main Page

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### Today's featured article



The [Single Convention on Narcotic Drugs](#) is the international [treaty](#) against illicit drug manufacture and [trafficking](#) that forms the bedrock of the global drug control regime. Previous treaties had only controlled [opium](#), [coca](#), and derivatives such as [morphine](#) and [heroin](#). The Single Convention, adopted in [1961](#), consolidated those instruments and broadened their scope to include [cannabis](#) and allow control of any drugs with similar effects to those specified in the treaty. The [Commission on Narcotic Drugs](#) and the [World Health Organization](#) were empowered to add, remove, and transfer drugs among the treaty's four Schedules of controlled substances. The [International Narcotics Control Board](#) was put in charge of administering controls on drug production, international trade, and dispensation. The [United Nations Office on Drugs and Crime](#) was delegated the Board's day-to-day work of monitoring the situation in each country and working with national authorities to ensure compliance with the Single Convention. This treaty has since been supplemented by the [Convention on Psychotropic Substances](#), which controls [LSD](#), [ecstasy](#), and other mind-altering pharmaceuticals, and the [Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances](#), which strengthens provisions against [money laundering](#) and other drug-related offenses.

Recently featured: [Battle of Aljubarrota](#) – [Louis Riel](#) – [Brian Close](#)

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### Selected anniversaries

**May 15:** [Independence Day](#) in [Paraguay](#) (1811); [Buddha's Birthday](#) in [Hong Kong](#), [Macau](#) and [South Korea](#); [Pentecost](#) in [Western Christianity](#) (2005).

- 1756 - [Seven Years' War](#): Britain declared war on [France](#), two years after fighting began in [Ohio](#).
- 1928 - [Cartoon characters](#) [Mickey](#) and [Minnie Mouse](#) made their [movie](#) debut in [Plane Crazy](#).



### In the news

- [Uzbek troops](#) kill over 300 people during [protests in eastern Uzbekistan](#) over the trials of 23 accused [Islamic extremists](#). President [Islam Karimov](#) (pictured) defends the act.
- [South Korea](#) announces that [bilateral talks](#) with [North Korea](#) will resume Monday after a one-year pause, with the [North's nuclear weapons](#) as a key issue.
- In [Taiwan](#), parties supporting new [amendments](#) to the [Constitution of the Republic of China](#) win with 249 of 300 seats in the [National Assembly election](#).
- [Pope Benedict XVI](#) waives the five-year waiting period usually required before [beatification](#), the first step towards [sainthood](#), for the late [John Paul II](#).
- The [U.S. Department of Defense's](#) [Base Realignment and Closure](#) program recommends closing 33 and realigning 29 major [military bases](#) as well as about 775 smaller bases.

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### Did you know...

From Wikipedia's [newest articles](#):

...that the [Eastern Newt](#) changes its [skin](#) colour from bright red to olive green when it becomes an adult, and is known as the *red eft* before adulthood?



...that because [Adelaide del Vasto](#) was [divorced](#) by King [Baldwin I of Jerusalem](#) in [1117](#), her son [Roger II of Sicily](#) refused to give assistance to the [Crusader states](#) during the [Second Crusade](#)?

# Locating Information in Organizations

---

- Digital documents are difficult to find
  - Adding metadata is an effort
  - People disagree on labels
- When found, documents are difficult to assess
  - Explanatory context often in inaccessible email DLs
- So people seek human links to relevant information, as before

# Expertise Location Isn't The Answer

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- Incentives and social processes are too complex
- Search technology is advancing dramatically
- (Exercise: search for < Shirky ontology overrated >)



# Conclusions

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- Lightweight, social tools or features that make information highly visible expand possibilities for KM support
- Emerging rapidly, as students enter the workforce will flourish
- Social practices and technology needed
- Unresolved questions re: limits to bottom-up organization

# Emerging Technologies and Knowledge Management

Jonathan Grudin  
Microsoft Research  
[jgrudin@microsoft.com](mailto:jgrudin@microsoft.com)

WACE 2005

8 September 2005